TECHNOLOGY DEPT.

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · MACHINERY · PARTS · ACCESSORIES · TOOLS

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PUBLIC LIBRARY MAR 27 1933 DETROIT

First Copy

Willys-Overland Continues International Truck Output, According to L. A. Miller

Output of These Trucks Was Stopped Only Because Of Suppliers' Difficulties During Bank Holiday, He Declares

Toledo, March 16.—Vigorous denial is made by L. A. Miller, co-receiver with John N. Willys, that production of International Harvester trucks by the Willys-Overland Company has been suspended indefinitely.

"The only reason production was discontinued temporarily was that because of the bank holiday it was impossible for our suppliers to furnish us with materials," said Mr. Miller today. "We were in the same boat as other manufacturers whose supplies were shut off in the same manner. This caused a temporary cessation of truck production.

L. A. Miller

"Beginning next week, now that the bank situation has cleared up, we expect to resume production of International Harvester trucks on a regular schedule. We have enough advance orders on our books to insure production for the next three months.

"As to passenger car activities, we are hoping that the general improvement in business will justify the resumption of production.

"There is a good export demand for Willys cars and the export produciton schedule will also be resumed next week."

CENTRALIZED TRUCK SERVICE PLANNED

Chicago, March 16.—Thomas J. Hay, Inc., Reo distributors, today announced an important expansion move, whereby all truck service work will be handled in a building which the company has just taken over at 2520 Indiana Ave. Heretofore all activities have been centered in the main establishment at 2229-37 S. Michigan Ave. Passenger car sales and service, as well as truck, parts and used car sales—in fact, all operations except truck servicing—will continue to be handled at the Michigan Avenue headquarters.

The new service station will be in charge of A. Fredericks, who has been identified with Reo truck service for many years. He is well known among truck owners and operators in Chicago and the Middle West.

Features of the new service building, which contains 16,500 square feet of floor space, are its spaciousness, affording ample room for trucks to turn around, as well as for repair and storage uses; its high ceiling and extra large doors.

"We have opened our new superservice building to take care of our rapidly expanding truck service requirements," said Tom F. Hay, president and general manager of the company. "This decision at this particular time is an indication of our confidence in the speedy revival of business in Chicago. Our new building is ideally suited for both present and future needs along service lines."

FEBRUARY TRUCK SALES ESTIMATED AT 9,682

Detroit, March 16.—R. L. Polk & Co. today released February commercial car sales figures for fourteen states and the District of Columbia, giving a total of 2,175 units. This compares with 3,282 commercial vehicles sold in this same territory in February of 1932.

In February of last year the total sale of commercial car units was 14,522. If sales for the thirty-four states still to be heard from follow the same ratio of decrease under those of a year ago, our total for February, 1933, will be approximately 9,682. The drop in commercial sales on the February returns to date works out at just a shade over 33 2-3 per cent. under those of last year.

In Detroit executives of motor truck manufacturing companies point out that prospective buying by the brewing industry and by companies engaged in carrying out

(Continued on Page 2)

CLEVELAND SALES MAKE GOOD SHOWING MAR. 1-15

New York, March 16.—The Cleveland Automobile Manufacturers and Dealers Association today wires Automotive Daily News that new car sales in that city from March 1 to 15 totaled 279 and used cars 1,726. Figures are not available for the first half of March, 1932, but the whole month last year showed a total of 1,240 new car and 5,599 used car sales.

On these figures sales were off somewhat over 50 per cent., but this is considered a remarkably good showing, in view of the fact that the national banking holiday was in effect during most of the period. Cleveland dealers generally believe that within a very short time sales will be on the upgrade and that the spring buying season may bring some pleasant surprises.

TOLEDO BANKS REOPEN SPURRING BUSINESS

Toledo, March 16.—The automotive business in Toledo has been given new impetus by the reopening of five banks here without restrictions.

Reopening of the banks released immediately all pay roll funds, some of which had been held up since March 1, when Toledo banks imposed the 5 per cent. withdrawal restriction provided under the emergency legislation in Ohio.

Return of checking facilities enabled many automobile owners to make monthly payments carried over from last month.

More Detroit Plants Swing Into Production This Week

Plymouth, Dodge, Packard and Hudson Have Resumed Operations; Detroit Outlook Becoming More Cheerful

By CHRIS SINSABAUGH

Detroit, March 16.—The automobile industry is responding to the upturn faster than had been anticipated or hoped earlier in the week. The Plymouth factory swung into production yesterday. This morning Dodge opened its plants. Packard started yesterday. As yet no definite announcements are available as to production schedules, but the fact that a number of factories have received reports sufficiently favorable to enable them to resume is distinctly encouraging.

The Hudson plant has been in operation ever since the bank holiday because of a bank of orders that had piled up during the body strike at its plant. Hudson is now operating at about 800 vehicle units per week. Officials say that there is not a single Hudson or Terraplane in any freight yard in the country. All shipments previously made have been taken up by the dealers. The executives say that dealers are not experiencing any trouble in accepting deliveries because of clearing through distributors.

As to sales Hudson reports that in several key points, such as New York, Kansas City and San Francisco, last week's sales ran ahead of those of the previous week, in spite of the banking holiday throughout the country.

A survey of conditions here conducted during the past two days indicated that it would be ten days or two weeks before any of the automotive factories would feel the improvement in the situation. Several leading executives informed Automotive Daily News that there was nothing in sight to indicate a resumption of production for two weeks. Then overnight the picture changed. Several plants which had been closed resumed, as noted above, and in others preparations are under way for resumption of work. The officials are, of course, waiting for further reports from the field to enable them to set definite production schedules, but a majority of them now believe that the delay will be of short duration.

Today there is a general feeling

(Continued on Page 8)

DUAL RATIO ON 70% OF AUBURN CARS SOLD IN FOURTEEN MONTHS

Auburn, Ind., March 16.—N. E. McDarby, vice-president of the Auburn Automobile Company, in charge of sales, reported here today that 70 per cent. of his company's vehicles built and shipped during the last fourteen months carried dual ratio.

This report covers the period since dual ratio was first presented to the public in January, 1932. It covers sales of both eights and twelves.

Mr. McDarby added: "The fact that more than two-thirds of all Auburn buyers during this period insisted upon having dual ratio, may be accepted as a definite sign of the way that this engineering development has won recognition among car owners."

PEED ANNOUNCES FIELD CHANGES

Detroit, March 16.—In line with a program of intensified sales strategy, Roy Peed, sales manager, announces several immediate changes in the field organization of De Soto Motor Corporation.

Roy Peed

J. E. Shelley, formerly district manager in Chicago, is transferred in a similar capacity to Cincinnati.

Harry Mahaffey, formerly assistant to the sales manager at the De Soto factory, goes to Chicago as district manager.

E. J. Barlow, formerly district manager in Cincinnati, goes to Cleveland to assume the district managership there.

J. B. Dorris, until recently district representative in Buffalo, becomes De Soto district manager in Atlanta, Ga.

CHAPIN ON RADIO TO DISCUSS BUSINESS TURN

Detroit, March 16.—Roy D. Chapin, secretary of commerce in the Hoover administration and now back at his old post as chairman of the board of Hudson, is billed for a radio address at 10.30 Saturday night over the N. B. A. network. Mr. Chapin will discuss the recent turn in business conditions, emphasizing the manner in which business may be expected to speed recovery.

There is widespread interest in Mr. Chapin's radio talk because he will be the first member of the Hoover cabinet to discuss the present turn of events.

RIM INSPECTIONS IN FEB. BELOW 1932

Cleveland, March 16.—Tire rims inspected and approved in February by the Tire and Rim Association, Inc., totaled 579,789, against 726,172 in February, 1932.

January-February inspection this year totaled 1,307,097 rims, against 1,536,931 in the first two months last year.

SEVEN COMPANIES SHOW FEBRUARY INCREASES TO DATE

New York, March 16.—In the general downward tendency that is to be noted in February passenger car sales seven companies stand out through having registered gains in the returns so far available, which include thirteen states and the District of Columbia. Automotive Daily News has noted from time to time an "honor roll" embracing states that have been able to show a sales increase over the same month last year. This is a new honor roll with the companies included, which have increased sales in the February pas-

(Contnued on Page 4)

QUESTIONS VALIDITY OF DIVERTING GAS TAX

Washington, D. C., March 16.—The validity of gas tax diversion laws is questioned in the following statement by Fred A. Eldean of the National Highway Users conference:

"Economic arguments and appeals pointing out the obvious injustice of selecting one group of citizens to shoulder the burden of various state enterprises are being presented to stem the tide of diversion measures now flooding the legislative mills.

(Continued on Page 5)

Used Car Market Quiet, With Stocks Large, in New Haven

New Haven, Conn., March 16.—The used car market in this city has been quiet during the first two weeks of March, with the banking situation putting a virtual stop to activity. Dealers' stocks for the most part are about the same as last year, it is reported.

Only the cheapest cars have been moving well of late, it is indicated. Heavy models of all years and the newer trade-ins are difficult to move. The falling off in new car sales has resulted in less overstocking on used models.

Charles Biever, head of the Biever Motor Car Company, Chrysler dealership of 138 Whalley Ave., reports only low-priced cars of 1929, 1930 and 1931 moving at all. The company's stock is about the same as in March, 1932, and is considered to be in fairly good shape, according to Mr. Biever.

The market for used cars of all types has been dull this winter, according to Winfred L. Foss, treasurer of the George B. Wuestefeld Company, 190 Whalley Ave., Studdebaker dealership. This concern has been successful in moving a number of the very cheapest cars in the $50 to $75 price class, but Mr. Foss reports little demand for newer models.

The Wuestefeld company's stock is at about the same elevel as in 1932, Mr. Foss said. He expressed hesitation to predict any developments in the used car field this spring, commenting that conditions change so rapidly it is impossible to determine what lies ahead.

Used car sales of the Cooley Chevrolet Company, 158 Whalley Ave., have been about normal for this time of year, according to S. S. Liebman, sales manager. The concern has booked a record number of advanced orders for new cars.

General Motors Has 372,284 Stockholders, a New High

New York, March 16.—The total number of General Motors common and preferred stockholders for the first quarter of 1933 was 372,284, compared with 365,985 for the fourth quarter of 1932 and with 345,194 for the first quarter of 1932.

There were 354,516 holders of common stock and the balance of 17,768 represents holders of preferred stock. These figures compare with 348,247 common stockholdrs and 17,738 preferred for the fourth quarter of 1932.

The total number of stockholders of both classes by quarters since 1917 follows:

Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
1917	1,927	2,525	2,669	2,920
1918	3,918	3,737	3,615	4,739
1919	8,012	12,523	12,358	18,214
1920	24,148	26,136	31,029	36,894
1921	40,035	59,059	65,324	66,837
1922	70,504	72,665	71,331	65,665
1923	67,115	67,417	68,281	68,063
1924	70,009	71,382	69,428	66,097
1925	60,458	60,414	58,118	50,917
1926	54,851	53,097	47,805	50,368
1927	56,520	57,595	57,190	66,209
1928	72,986	70,399	71,682	71,185
1929	105,363	125,165	140,113	198,600
1930	240,483	243,428	249,175	263,528
1931	286,378	285,655	293,714	313,117
1932	345,194	359,046	364,401	365,985
1933	*372,284	.....	.....	.....

*Preferred stockholders of record January 9, 1933, and common stockholders of record February 16, 1933.

FEBRUARY TRUCK SALES ESTIMATED AT 9,682

(Continued from Page 1)

the public works program that will probably be sponsored by the present administration will give the truck division an enormous boost. While the showing in sales to date in 1933 has not been heavy, truck executives are far from discouraged; in fact, they expect a drastic improvement, based on certain definite factors, involving increased demand.

JANUARY AUTOMOTIVE EMPLOYMENT GAINED

Washington, March 16.—Employment in the automobile industry increased by 11.7 per cent. in the period between December, 1932, and January, 1933, according to figures released by the Bureau of Labor Statistics.

SEEK COMPROMISE BILL

Concord, N. H., March 16.—Efforts to draft a compromise truck regulation bill which will be satisfactory to both motor truck and railroad interests are being made by a subcommittee in the New Hampshire Legislature. Agreement has already been reached on several safety and health provisions, it is reported.

Other cars are bigger but none better

The American Austin

America's Most Economical Passenger and Commercial Cars

$275 up F. O. B. Factory

Write for details about non-conflicting and valuable franchise

American Austin Car Co., Inc., Butler, Pa.

National List of Breweries

Operating 10 or more automotive vehicles. Showing the names of the men who control automotive buying and operating policies.

Net Cash Price, $25

Fleet Owner List Co.

1819 Broadway New York, N. Y.

FINANCIAL NEWS

OWENS ILLINOIS GLASS

Toledo, March 16.—The Owens-Illinois Glass Company has received an order for 15,000,000 bottles from the Rainier Brewing Company of Portland, Ore. The first 5,000,000 bottles are to be shipped the day beer is legalized.

The largest order received in recent months by Owens-Illinois is that for 29,000,000 bottles from Anheuser-Busch, Inc., of St. Louis.

MOTOR WHEEL

Detroit, March 16.—Stockholders of Motor Wheel Corporation at the annual meeting voted to change par value of common stock to $5 a share from no-par, effective March 23. George A. Rentschler was elected a director to fill a vacancy. Other directors and officers were re-elected.

AUTO-LITE CO.

Toledo, March 16.—Electric Auto-Lite Company has deferred action on the common dividend of 30 cents due at this time. Regular quarterly dividend of $1.75 on the preferred stock was declared, payable April 1 to stock of record March 25.

C. O. Miniger, president, has issued the folowing statement:

"On account of the unsettled business conditions, the directors deferred action on the common stock dividend until the June meeting, although the indications are that the company's earnings for the first quarter will be in excess of preferred dividend requirements."

STEWART-WARNER

Chicago, March 16.—Stewart-Warner Corporation reports for 1932 announces a net loss after depreciation and expenses, $2,445,197, compared with net loss of $1,830,171 in 1931. Current assets were $6,213,127 and current liabilities, $782,892, comparing with current assets of $9,250,867 and current liabilities of $947,764 a year before.

TIMKEN ROLLER BEARING

Detroit, March 16.—Timken Roller Bearing reports net operating loss of $482,827 in 1932, after depreciation and taxes. After absorbing this loss and paying dividends of $1.37 a share, amounting to $3,315,803, during the year, surplus is shown at $33,505,894. Cash, government bonds and marketable securities amount to $13,556,380. Assets exceed liabilities 37 to 1.

DOEHLER DIE CASTING

New York, March 16.—Doehler Die Casting Company reports for 1932: Net loss after taxes, depreciation, interest and other charges, $98,497, compared with net profit of $139,113, equivalent, after annual dividend requirements on 7 per cent. preferred and $7 preference stocks, to 4 cents a share on 153,717 no-par common shares, in 1931.

SPICER

New York, March 16.—Spicer Manufacturing and subsidiaries show for 1932 net loss of $1,414,315 after depreciation, reserve against inventories, loss on sale of securities, etc., comparing with net loss of $1,015,630 in 1931.

SWEDISH BALL BEARING

New York, March 16.—Swedish Ball Bearing shows for 1932 net profit of 10,082,913 kroner after deduction of depreciation on buildings and machinery amounting to 4,165,209 kroner and provision for taxes amounting to 2,000,000 kroner.

COLUMBIAN CARBON

New York, March 16.—Columbian Carbon and subsidiaries report for 1932, as certified by independent auditors, net profit of $954,016 after depreciation, depletion, Federal taxes, minority interest, etc., equal to $1.77 a share on 538,420 no par shares of capital stock. This compares with $1,628,794 or $3.02 a share in 1931.

CORD

New York, March 16.—Interests headed by E. L. Cord, young automobile manufacturer, have emerged triumphant in the struggle for control of the Aviation Corporation which started last fall. Eight of the company's seventeen directors, including Richard F. Hoyt, the president, resigned yesterday and their places were promptly filled by Mr. Cord's representatives.

SPARKS from DETROIT

Proper Lighting

Banking Situation

Stock Exchange

Factory Schoolmasters

Chris Sinsabaugh

Detroit Editor

AUTOMOBILE dealers as a whole are not paying sufficient attention to properly lighting their salesrooms, the result being that prospects do not get the full value of the modern paint jobs which manufacturers are giving them. Scientific lighting should reduce sales resistance among those to whom eye appeal is a strong factor in selecting a new car.

* * *

THIS IS THE REACTION of representatives of the automobile and paint and lacquer companies, brought together at a dinner given by Henry G. Stevens of the Scarab Club to listen to George W. Styles, a recognized authority, talk on "Color Theory and Analysis."

That this will be passed along to sales promotion departments seems certain, for among the listeners were Fred Rockelman, Continental's vice-president in charge of sales; Clarence Foss of the color division of General Motors; C. B. Hill, Fisher Body's color expert; Joseph Sherman of Cadillac; John Oswald, chief body engineer of Oldsmobile; Henry Crescelius, chief body engineer of Lincoln; Raymond Dietrich, Chrysler body designer; Howard Ketchum of du Pont's color research; William Haarz, color engineer of Graham-Paige; Amos Northup, Murray Body designer, and Kingston Forbes, assistant chief engineer of Buick.

* * *

THE DINNER BUT EMPHASIZED the attention the automobile industry is giving to the subject of scientific lighting. As yet it has not extended to dealers' salesrooms but that's coming. Right now factories are utilizing it in spray booths to bring out imperfections in paint jobs and the use of Cooper Hewitt or combination lighting is said to not only represent a considerable saving in operation but in better inspection.

"Dick" Glover, lighting engineer of General Electric, and located in Detroit, was at the dinner and in connection with factory use of his scientific lighting, declares that "production engineers, from practical tests, have proven that in properly lighted and ventilated spray booths bodies can be sprayed 10 per cent. quicker, with a saving of 10 per cent. in lacquer, with fewer rejects and refinishes, which amounts to from 10 to 25 cents per body."

* * *

THE DETROIT BANKING situation has brought out of retirement that great old war horse, E. Le Roy Pelletier, who has been recruited as public relations counsel (slang for publicity director) for Messrs. Keyes and Schram, Federal conservators whom Uncle Sam has placed in charge of the First National and Guardian National.

Well we recall Pelletier in those golden days when he directed Ford's advertising and later on handled E-M-F, Reo and Rickenbacker. What a man! He retains all the "wim" and "wigor" so far as advertising and publicity is concerned that he possessed in his younger days and this new job is going to fit him to a T and this doesn't mean a Model T, either.

* * *

AND WHILE WE ARE STILL talking about banking and the like, it might be well to record the reaction Wednesday when the stock exchanges started operating again. Across the street from us, in the General Motors Building, there is a broker's office where some of the brass hats of the industry are wont to drop in and read the ticker. When the tape began to record increased quotations it was noticeable how the automobile men responded. Cheerful smiles were on all faces, there was a different atmosphere than in the darker days and one felt that indeed "Happy Days Are Here Again."

* * *

ARE FACTORY SCHOOLMASTERS hitting the right keys in educational propaganda for automobile salesmen? There's one of the big companies which has been training dealers' sales managers on how to properly sell cars, advising stressing appearance, performance and value. This course has lasted for more than a month, but the other day one of the pupils was asked if he derived any benefit from the schooling.

"I've had a good time," he said, "but they have not answered three fundamental questions which every prospect asks. They don't seem to be impressed by looks, performance, etc, but they do want to know: 'How much for the old car?' 'How much a month?' 'How many months have I to pay for a new one? The right answers to those three questions are the deciding factors nowadays, I think."

Retail Salesmen — This Is Your Page

This department is devoted to the interests of the retail sales division of the industry. Salesmen, this is your department. Automotive Daily News wants you to get something from this department that will help you in your work on the firing line. It wants you to pass on your own experiences, success, failures to help your brother salesmen. Send in your story in the form of a letter, or even a postal card, and let us get it ready for publication. Your achievement or your mistake may help another salesman to make sales or avoid errors that cost you commissions.

Dealers read this page. Give us the benefit of your reactions on these problems that affect the work of your salesmen, the men on the firing line, the men who bring home the bacon or don't.

SALES CAN BE MADE IN THE SUBURBS

Dan J. Nolan, manager of the Pierce-Arrow Sales Corporation in Cleveland, looked around a while back for new ways of selling Pierce-Arrows. He pored over his sales sheets, he pondered long and earnestly and then came up with the idea that while Pierce-Arrow was doing splendidly in Cleveland, it was not selling all that it could in the smaller towns and cities in the territory.

Once convinced that he had hit a real buying field that would pay for cultivation, Mr. Nolan put on an aggressive sales campaign in the suburbs, so to speak. Here is part of a letter that he sent recently to the home office, indicating that suburbia pays for really agressive cultivation:

"An analysis of our business for the last two months," says the Cleveland manager "definitely proves to us that there is business in the small towns if you go after it the right way. In the past two months we have delivered the following new cars to owners in the smaller cities and towns in this area:

One Model 836 to Elyria.
One Model 836 to Ashtablua.
One Model 836 to Akron.
One Model 1242 to Elyria.

"In addition to these cars already in the hands of their owners, we have the following orders at the factory for retail delivery in the territory:

One Model 836 for Alliance.
One Model 1236 for Ashland.
One Model 1236 for Galion.

"At the present, we have four or five real hot prospects in the outlying territory which we hope to get very shortly. We are giving demonstrations tomorrow in Tiffin, Youngstown and Galion.

"Another interesting thing has developed from my composite daily work sheet which I started recently. On this sheet eleven people have bought—eight of whom we have sold. The only trouble is, while our average is good, we haven't sold enough of them."

SELLING "APPEARANCE MAINTENANCE" PAYS

Selling his customers "appearance maintenance"—in fact the whole line of automotive chemical products—has proved to be a profitable venture for George Viosca, owner of the Viosca Service Station, 5050 Canal St., New Orleans, the chemical group of the M. E. M. A. reports.

Viosca realized from the start, and he's only been operating the station for sixteen months, that it takes smart appearance on the part of his own establishment to sell appearance to others, and he has proceeded on that basis from the beginning.

He operates a complete service station, which is open day and night and in addition to selling gas and oil carries a complete line of tires and tubes, supplies battery service and road service at all hours. Then he also sells his customers the appearance idea by silent example and verbal suggestions.

His service station is built entirely of metal. It is kept scrupulously clean, inside and out. Furthermore, it is attractively arranged and the windows always are beautifully decorated—usually with merchandise that is in line with the season. The lawn and shrubbery surrounding the station are well kept—and on special occasions, such as holiday seasons, even the lawn comes in with its share of the display effects.

A 1,000-watt floodlight illuminates not only the station but the drives and pumps at night with an intensity that makes the place stand out as a bright spot of the city. It is conceded to be the best lighted service establishment in New Orleans.

An island store between the gas pumps supplements the displays of merchandise in the windows and adds to the general attractiveness of the complete layout. Viosca insists that his visible demonstration of the effectiveness of good appearance has been an important factor in the ability of his sales organization to sell appearance to his customers. In spite of the fact that he started business during the depression he has gained new customers consistently from the opening day.

Another member of the chemical group reports the following incident as an example of alertness which has won a raise in pay for the night man in a parking and service garage in a Middle West city.

The garage is located on a main highway in a semi-residential district, so it serves regular customers on a weekly or monthly basis, and also takes in transients on an overnight basis. The night man pumps gas, washes cars and does other similar jobs which are all a part of the average night man's duties.

This particular fellow, however, has developed a specialty.

Leaky cooling systems, even those with slight leaks, are easy to discover when the car stands still for several hours on a clean floor. He keeps his eye peeled for evidence of leaks, makes a note of the car when he discovers a leak and turns such notes over to his boss when he is relieved in the morning.

Then when the customer comes to get his car the boss comes forward with a can of stop-leak and suggests its use as an effective remedy.

Our Leading Dealers and How They Got That Way

A series of brief biographies of outstanding motor car and truck merchants.

FREDERICK W. WILLIAMS,
President The Williams Corporation, Graham Distributor, Hartford, Conn.

Frederick W. Williams, president of The Williams Corporation, Graham distributor, at 565 Connecticut Boulevard, East Hartford, Conn., began his automobile career in California in 1908. At that time he was engaged in the sale of Petrel and Moon cars.

He returned East in 1912 to become sales manager for John P. Agnew in New York city, who was at that time Eastern distributor for the Krit. Later Mr. Williams was associated with the Hudson interests in New Britain, Conn. History records that he made a very good job of it.

In 1919 Mr. Williams came to Hartford and took on the Paige as distributor in five counties of the state. Practically all of the time since he has represented that line and its successor, the Graham. Later on the territory was increased in size, and the Williams organization did very effective work. At the present time the organization has all of the state of Connecticut as its terriory with the excepion of Fairfield county.

The Williams Corporation has developed a very effective sales orgainzation throughout the state, and even in these subnormal times it is functioning very satisfactorily. All the important cities and towns throughout the state are covered by the organization and its dealers.

In addition to directing the affairs

(Continued on Page 4)

Six Truck Sales Leaders for Feb.-Jan., 1933

Returns for today: Delaware, Idaho, Indiana, Maryland, Michigan, Minnesota, New Hampshire, North Carolina, North Dakota, South Carolina, South Dakota, West Virgina and Wisconsin.

In this table: 13 states.

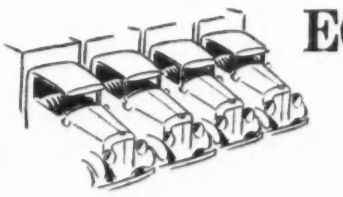
FEBRUARY, 1933 State	Sales	FIRST		SECOND		THIRD		FOURTH		FIFTH		SIXTH	
Delaware	39	Chev	28	Ford	7	Int	3						
Idaho	19	Chev	7	Ford	6	Int	4	Dodge	2				
Indiana	275	Chev	134	Ford	58	Int	37	Dodge	15	G-I	7	Stude	4
Maryland	190	Chev	106	Ford	33	Int	20	White	6	GMC	4	Dodge	3
Michigan	299	Chev	151	Ford	63	Dodge	22	Int	18	G-Wi	10	Reo	9
Minnesota	203	Chev	118	F-In	28	Reo	6	DT	5	Federal	4	Stude	3
New Hampshire	49	Chev	27	Ford	11	Int	7	*	1				
North Carolina	230	Chev	138	Ford	58	Int	17	DT-D-G	3	Au-I-R	1		
North Dakota	13	Ford	5	Chev	4	Int	3	Reo	1				
South Carolina	76	Chev	39	Ford	28	Int	5	Austin	2	D-G	1		
South Dakota	36	Chev	15	Ford	14	Int	5	DT-S	1				
West Virginia	102	Chev	53	Ford	19	Int	11	Dodge	7	G-R	4	I-St	1
Wisconsin	166	Chev	73	Ford	45	Int	22	DT-D	6	G-S	4	Sterling	2

JANUARY, 1933 State	Sales	FIRST		SECOND		THIRD		FOURTH		FIFTH		SIXTH	
Delaware	49	Chev	29	Ford	15	I-IN	2	Reo	1				
Idaho	39	Chev	20	Ford	15	Int	3	GMC	1				
Indiana	405	Chev	147	Ford	141	Int	58	Stude	14	Dodge	12	GMC	9
Maryland	166	Chev	69	Ford	40	Int	13	GMC	7	Dodge	5	Autocar	4
Michigan	401	Chev	176	Ford	135	Int	34	Federal	16	D-S	8	G-R	7
Minnesota	291	Chev	147	Ford	93	Int	20	Dodge	11	DT	8	Stude	4
New Hampshire	37	Chev	17	Ford	10	DT-In	3	*	1				
North Carolina	402	Chev	194	Ford	138	Dodge	18	Int	17	GMC	9	Au-DT	6
North Dakota	30	Chev	16	Ford	8	Int	4	D-G	1				
South Carolina	113	Chev	69	Ford	26	Int	6	Austin	4	GMC	3	Dodge	2
South Dakota	38	Chev	15	Ford	14	Int	5	*	1				
West Virginia	153	Chev	75	Ford	56	Int	13	GMC	3	D-I	2	Stude	1
Wisconsin	236	Ford	91	Chev	73	Int	18	DT	15	Dodge	10	GMC	8

KEY TO ABBREVIATIONS AND SYMBOLS

A—Autocar; B—Brockway; C—Chevrolet; D—Dodge; DT—Diamond T; F—Ford; Fe—Federal; G—GMC; I—Indiana; In—International LFR—La France-Republic M—Mack; R—Reo; S—Studebaker; St—Stewart; W—White; Wi—Willys.

CONVENIENCE encourages him to be ECONOMICAL



FLEET OWNERS know that practically every tire today will faithfully fulfill its mileage promise *if* the air in it is kept at the recommended pressure.

The more convenient it is to inflate and air-gauge tires the less likely drivers and service men are to neglect these important details. Consider this *human factor* in the economical operation of your truck, bus or delivery car fleet. . . . Equip every tire valve stem with a Schrader Dublchek, and you make inflating and gauging as easy as turning on a water tap.

Your regular source of supply has, or can obtain, Dublcheks for you. A. Schrader's Son, Inc. *Makers of Pneumatic Valves since 1844.*

Schrader
Reg. U. S. Pat. Off.

TIRE-SAVING VALVES, CAPS AND GAUGES

Be sure it's a Schrader—Look for the name

Schrader Dublchek is an airtight valve cap that allows inflating and testing right *through* the cap. Permanently attached. Combines protection of the valve core against dust and dirt with a secondary air seal even should the inner valve core become damaged.

★

Gasoline, Tire and Accessory Stations. Display Dublcheks in the new Schrader Display Carton. Display attracts; creates interest. A few words of explanation make every motorist a likely customer for Dublcheks. Fifty Dublcheks per carton—affording dual display on the usual purchase of one hundred.

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

Published Every Day Except Sunday, Monday and Holidays, and Tuesday, When a Holiday Falls on Monday

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ADVERTISING AND BUSINESS HEADQUARTERS

Harry A. Tarantous, Business Manager. 350 Hudson St., New York, N. Y.
B. B. Crighton, Assistant to Business Manager

George M. Slocum, Manager, Detroit Bureau, 427 Fisher Building, Detroit, Mich.; phone Trinity 2-3500. Willard R. Cotton, Western Manager, 333 North Michigan Ave., Chicago, Ill.; phone Andover 2400. Metz B. Hayes, New England Manager, Little Building, Boston, Mass. Blanchard, Nichols & Coleman, American National Bank Building, San Francisco, Cal.; Lincoln Building, Los Angeles, Cal.; 1037 Henry Building, Seattle, Wash. Address ALL Advertising and business correspondence to 350 Hudson St., New York city

EDITORIAL DEPARTMENT

350 Hudson St., New York, N. Y. Telephone CA-nal 6-1000
Alexander Johnston, Editor William C. Callahan, News Editor

Statistical Department (registration and specifications), P. J. Robas, statistician. Engineering Department, Herbert Chase, engineering editor. Merchandising Department, Charles S. Zack, editor. Art Department, John Bauerfeld, director.

Detroit Bureau, Chris Sinsabaugh, editor, 427-8 Fisher Building, Detroit, Mich. Telephone Trinity 2-8500. Contributing editor, John C. Wetmore.

Beer and Motor Sales

PASSAGE of the bill modifying the Volstead act to permit manufacture and sale of beer is going to put a considerable amount of money into motor vehicle cash registers. Estimates of the amount that will be spent for new automotive equipment for use in delivering the newly legalized beverage differ, but the total will be considerable even at the lowest estimate.

Floyd Gibbons recently completed an investigation, during which he interviewed brewers from coast to coast. He estimates the expenditure for motor trucks at $15,000,000. From figures which have already appeared in Automotive Daily News, this estimate appears to err on the conservative side.

Morris Machol, who heads a list company, some weeks ago sent out a questionnaire to 200 breweries now operating, asking them a number of questions as to what money would be spent if beer came back on a legal basis.

The replies from these 200 breweries stated that, in the event of the beer law passing, they would purchase 4,596 new trucks and 4,962 new passenger units for the use of executives and salesmen. The amount to be spent in this way was $16,932,000.

But this was just the beginning of automotive expenditures. The companies estimated that they would spend $6,217,400 in repairs and overhauling of their present equipment to prepare it for active service.

They estimated that the annual expenditure for fleet maintenance, salaries, insurance, fuel, oil, tires, etc., would be $14,687,000. And, further, the brewers estimated that $5,230,000 would have to be spent for garage and other equipment incidental to putting the beer fleets on an operating basis.

This makes a grand total of more than $43,000,000 that would be spent in the automotive industry throughout its various branches by breweries now active, and it is estimated that there are 400 breweries which are now inactive and which would soon resume who were not covered by the questionnaire. This sum would certainly contribute importantly to the forward movement which appears to be likely in the automotive industry.

In connection with the possibility that beer will very shortly become a legal beverage again, there are other interesting possibilities which will indirectly effect automotive sales as they will sales in other fields.

When the breweries open, employment will be created for at least 300,000 men in the actual production of the beverage and its distribution. At least $360,000,000 will be spent in repairs to the breweries and in equipment, machinery, vats, etc.

It has been estimated that $75,000,000 will be spent in buying the initial stock of grain and other ingredients to be used in the manufacture of beer. It will be necessary for the brewers to buy $50,000,000 worth of new kegs and $15,000,000 worth of bottles. The sum of $12,000,000 will have to be spent on new cases for carrying bottled beer. The bill for new labels will run to $5,000,000.

All these expenditures will create employment, which in turn will be directly translated into buying power. The automotive industry, in common with other businesses, will benefit from this increased ability to buy.

It has been argued that the legalizing of beer will not create a new industry, but will simply give us a legal business replacing the illegal activities of the past fourteen years. To begin with, the manufacture of beer during "prohibition" has never reached the extent of the production of hard liquor. The bulk of beer made it a less profitable product that hard liquor has been, though, of course, the manufacture and sale of beer and home brew has gone steadily forward.

None the less, in many aspects legal brewing now will give us the immediate effect of a new industry. New trucks and new cars will be bought, new barrels and new bottles stocked, repairs made on existing fleets. Even though this drives out the fleets now operated by illicit breweries, the effect at the moment is the creating of brand new business.

And we have not even hinted of the moral effect in creating a legitimate industry instead of an illicit business. Nor have we mentioned the $150,000,000 or more that our government will derive in legitimate taxes which formerly went to make powerful racketeers.

BIOGRAPHY

(Continued from Page 3)

of a growing sales organization Mr. Williams is vice-president of the Underwriters Finance Corporation of Hartford, Conn. Until recently he was executive vice-president, but relinquished the post to devote his whole time to the Graham line.

Mr. Williams has long been active in the affairs of the Hartford Auto-

FREDERICK W. WILLIAMS

mobile Dealers' Association. He was formerly president of that body and also served as chairman of the show committee being entrusted with staging the annual automobile shows which have been held for the past twenty-six years. His wide experience has been of value to the association.

The Williams Corporation occupies a spacious sales and service building on the Connecticut boulevard and is especially keen on service.

The firm has been very conservative in the selection of associate dealers. Even though the past year was an off period for the sale of automobiles, the Williams organization made very satisfactory progress.

SEVEN COMPANIES SHOW FEBRUARY INCREASES TO DATE

(Continued from Page 1)

senger car reports so far received over the same month of 1932.

In the lowest priced division Ford and Plymouth have both shown a gain. The Ford total is 2,295, against 1,826, and Plymouth's record is 1,303, as compared with 709 a year ago.

The complete list of cars showing a gain in the February returns so far received are:

	Feb., 1933	Feb., 1932
Austin	50	7
Continental	11	0
Dodge	575	533
Ford	2,295	1,826
Packard	110	107
Plymouth	1,303	709
Rockne	262	90

SEE NEW CAR GAINS AS BANK HOLIDAY ENDS

Union City, N. J., March 16.—Optimism and confidence is the slogan of the automobile dealers in this section. Almost every dealer is of the firm conviction that the passing of the bank holidays will mark the turning point of the depression, and that from now on rising prices will be in order for almost eevrything. W. H. McNaughton, Nash dealer, says the people are satisfied, and now they are going about their business and buying the things they need.

Another outburst of optimism was offered by George Laessig, local Chevrolet dealer, who says he has been waiting for this turning point for the past two years. Now that the turn is here, Laessig further adds that all the Crevrolet dealers intend to prepare for all the business they can secure.

N.S.P.A. REPORTS HELP JOBBERS FIGURE MACHINE SHOP COSTS

(THIRD INSTALLMENT)

Suggested refinement in cost-finding procedure follow:

Shop Labor—Another deduction may be made from the shop labor account. This deduction should be entered in the space provided on the cost-finding form under

ADJUSTMENTS AND POLICY

This should include an amount equal to

The time shop employees spend on work which must be done over and cannot be charged to the customer, and,

The time shop employees spend on work which was done correctly according to orders—the error being on the part of the customer and for business reasons the work is done over on a no charge basis.

The time consumed on adjustment and policy work may be taken from shop time cards, if the proper notations are made thereon.

Machine Shop Credit—The majority of automotive wholesalers who operate machine shops consider the shop a valuable asset in selling parts and shop equipment.

Therefore it seems desirable to credit the machine shop department with an amount dependent upon the value the wholesaler places on this asset.

For example, if the machine shop is considered to have a 10 per cent. sales value to the other departments of the business, this amount would be deducted to arrive at total machine shop cost.

Suggested methods for allocating indirect expenses follow:

Method No. 1—Establish the percentage machine shop labor sales are of the total gross sales of the business, including machine shop labor sales. Then charge that portion of the total indirect expenses to the machine shop as represented by the percentage of machine shop sales to total gross sales.

For example—

Merchandise sales	$9,000	90%
Shop labor sales	1,000	10%
Total gross sales	$10,000	100%
Total of indirect expenses	$2,000	
Per cent. shop labor sales to total sales		10%
Amount of indirect expenses chargeable to machine shop		$200

This method of allocating the indirect expense is simple. And because it is simple it does not give a very accurate distribution, because it does not comprehend invested capital. However, this method is better than none.

Method No. 2. Establish the ratio between the total direct expenses chargeable to the machine shop and those chargeable to all other departments of the business. In each instance, these direct expenses should include salaries and wages, rent, depreciation, interest on investment, supplies and other direct expenses of the machine shop and all other departments of the business.

Then charge that portion of the total indirect expenses to the machine shop, as represented by the ratio of direct shop expenses to all other direct expenses.

Method No. 3. Establish the percentage the machine shop capital investment is to the total capital invested in the business, including the machine shop investment. Then charge that percentage of the total indirect expenses to the machine shop.

This method is favored because the return on capital invested as a unit of measurement has supplanted the old net profit to net sales ratio yardstick for profits.

MERCHANDISING ACTIVITIES

The machine shop merchandising activities are divided as between those which help the wholesaler sell his shop facilities to the automotive service retailer—the independent repairman and car dealer—and those which help the retailer sell these facilities to the car owner.

Among the outstanding merchandising activities which should be considered to help sell machine shop services to retailers are the following:

Direct Mail—A continuous campaign consisting of an initial mailing piece showing a general view of shop facilities, and follow-up mailings showing individual machines and repair-operation reminders.

Some of these reminders could be in the form of envelope stuffers to be mailed with statements, others may be printed on 1 cent government post cards.

Miniature photos of present machine tools and particularly new tool installations, placed on statements and letters to customers are effective reminders.

Salesmen—Outside salesmen and incoming phone order takers should keep reminding customers of the machine shop facilities.

They should have complete price information handy so as to expedite making quotations on inquiries.

Shop Personnel—Effective selling may be done by shop employees, particularly foremen. They should be sent out to call on regular and potential customers during normally quiet half-days in the shop.

Being mechanically minded, naturally these men will talk the repairmen's language. They may be able to give immediate assistance or advice on a job the repairman has in the shop, thereby creating "good will" for the wholesaler.

Salesmen should be permitted, even encouraged, to request the assistance of the shop foreman in soliciting the machine shop work of worth while accounts, particularly fleet owners who operate their own shops.

* * *

Merchandising activities should not be limited to automotive service retailers, but should cover industrial plants, contractors, mining operations, the marine field, and the farmers if rural areas are covered.

* * *

Services—Some wholesalers are profitably operating especially equipped machine shop trucks for reconditioning the engines in the more popular cars. These trucks carry the necessary parts for immediate installation.

Others have provided space so that repair men may bring cars into the wholesalers' place of business for major overhauling. These wholesalers only provide the parts and machine shop work, and the repair man does the dismantling, assembling and making final adjustments.

Delivery Men—These men should be encouraged to ask customers when making deliveries if there is any machine shop work they can take back to the shop.

To build up interest and to keep idle shop time at a minimum, delivery men should be given a bonus periodically for picking up connecting-rods to be rebabbited, brake bands and shoes for relining, etc.

Rebuilt Units—Providing completely rebuilt engines and other units and parts which can be reconditioned.

This program to include the re-

(Continued on Page 8)

COMING EVENTS

MARCH

10-19—Geneva, Switzerland. International Automobile Show.
20—Washington, D. C. American Chemical Society meeting.
20-25—Union City, N. J. North Hudson Automobile Show, Columbia Park.
27-April 1—Minneapolis. Automobile Trade Association, Northwest Automobile Show, Auditorium.
27-April 1—New London, Conn. Automobile show, State Armory.

APRIL

12-27—Milan, Italy. International Automobile and Nautical Show.
21-21—Cleveland, O. National Petroleum Association, meeting.

MAY

2- 5—Washington, D. C. United States Chamber of Commerce, meeting.
17-18—Tulsa, Okla. American Petroleum Institute, mid-year meeting. Mayo Hotel.

JUNE

16-17—Louisville, Ky. American Automobile Association, convention.
18-July 3—Bordeaux, France. Seventh Automobile, Nautical and Aeronautical Show.

Develops Procedure in Building Adequate Driver Personnel

G. A. Rogers, general manager of delivery of the Hoffman Beverage Company, Newark, N. J., has developed a procedure in building an adequate driver personnel by large fleet operators, which should be of interest to every operator, even though he may have but one or two trucks on the road.

Stating that legislatures almost everywhere were trying to enact certain restrictions which would cramp the style of any large fleet operator and curtail the use of certain types and sizes of equipment, Mr. Rogers suggested that if each individual driver would so conduct himself each and every mile he drives as to merit the support of public opinion, the opponents of some of this legislation might stand a better chance of winning out.

He stresses the necessity that operators, large or small, must constantly work with their drivers in an effort to bring about a favorable reaction on the part of the public toward the commercial motor vehicle operator.

As the best means to this end he recommends complete exemplification of road courtesy. Selection and testing of a driver applicant should be made through interview, driving tests, physical examination and references, he believes.

With no attempt to place them in the order of their importance, he listed the following factors that should be included in a fleet operator's safety rules:

A demand for road courtesy.

A proper regard for the use of the highway.

A proper regard for other vehicles.

A proper regard for pedestrians.

Appreciation of the traffic officer's desire to be of real help.

An understanding of why traffic rules and laws are necessary.

A realization that "right of way" means nothing in so far as preventing an accident is concerned—it may have its legal value.

A realization that intersections are stages for accidents.

A realization that at an intersection the best driver in your employ may have to bring himself to the level of an extremely poor driver whose car he may meet at the intersection.

Expecting the unexpected.

Taking nothing for granted.

Never driving through the scene of an accident.

Working knowledge of traffic regulations.

Detailed parking instructions, particularly grades.

Mr. Rogers also explains the advantages and disadvantages of a short and long driving test. He believes that the long test is better, because a good driver, anxious to obtain a position, makes a poor grade because of his anxiety during the drive over a short distance, whereas on a longer trip he tends to relax and drive naturally.

On the other hand, the relaxation which permits the good driver to show his mettle and habits, uncloaks the poor driver, who may be on his guard, and might make an excellent showing in a brief test.

Road inspection was described as the greatest tool in accident prevention work. Under normal conditions each man is picked up once a day by a road supervisor and his driving, delivery technique and store courtesy are carefully checked. An inspection report is made out and signed by the driver, who should know anything good or bad that has been reported by his superior. On the basis of these reports the safety code may be revised or added to.

COLORADO LAW INVALID AS TO PRIVATE HAULERS

Denver, Colo., March 16—The Colorado Supreme Court held invalid the 1931 law relating to motor carriers with respect to the requirement of a permit by one hauling his own property in his own vehicle, upon the ground that the title of the act was not sufficiently broad to cover this situation. The ordinary and proper interpretation of the words in the title "used in the business of transporting persons or property for compensation or hire" another person. The words "compensation" and "hire" are to be considered as synonymous. Therefore, the title of the act is not broad enough to include one who transports his own goods in his own vehicle over the highway and who sells the goods for profit. The Supreme Court further held that the provisions of the 1931 law are separable, while the section relating to private hauling is unconstitutional if it doe snot affect the remainder.

QUESTIONS VALIDITY OF DIVERTING GAS TAX

(Continued from Page 1)

These failing to prevent enactment, what bulwarks may be found in the field of legal validity? While the ultimate answer, of course, will depend upon the laws—including the Constitution—of the particular state involved, it may, nevertheless, be well to set forth general considerations which may be raised.

"In those states where exemptions or refunds are made to certain persons on motor fuel to be employed in certain 'non-highway' uses they raise the question that diversion destroys the basis for classification and therefore discriminate against other users of the same product, making one person, for example, contribute to poor relief and to other state projects, while the exempted or refunded purchasers does not make a similar contribution.

"A number of states, such as South Dakota, have constitutional provisions to the effect that no tax shall be levied except in pursuance of a law which shall distinctly state the object to which the tax only shall be applied. Where a gasoline tax levy has been made with the provision that the moneys were to be used for highway purposes and now a law is passed merely shifting or diverting the moneys received to another purpose, such a measure would be of doubtful legality in view of a constitutional provision as above referred to.

"The object of the diversion must come within the 'public purpose' provision in many state constitutions. However, the broad construction placed upon this term by many courts has rendered the term of little consequence in so far as its restrictive nature is concerned.

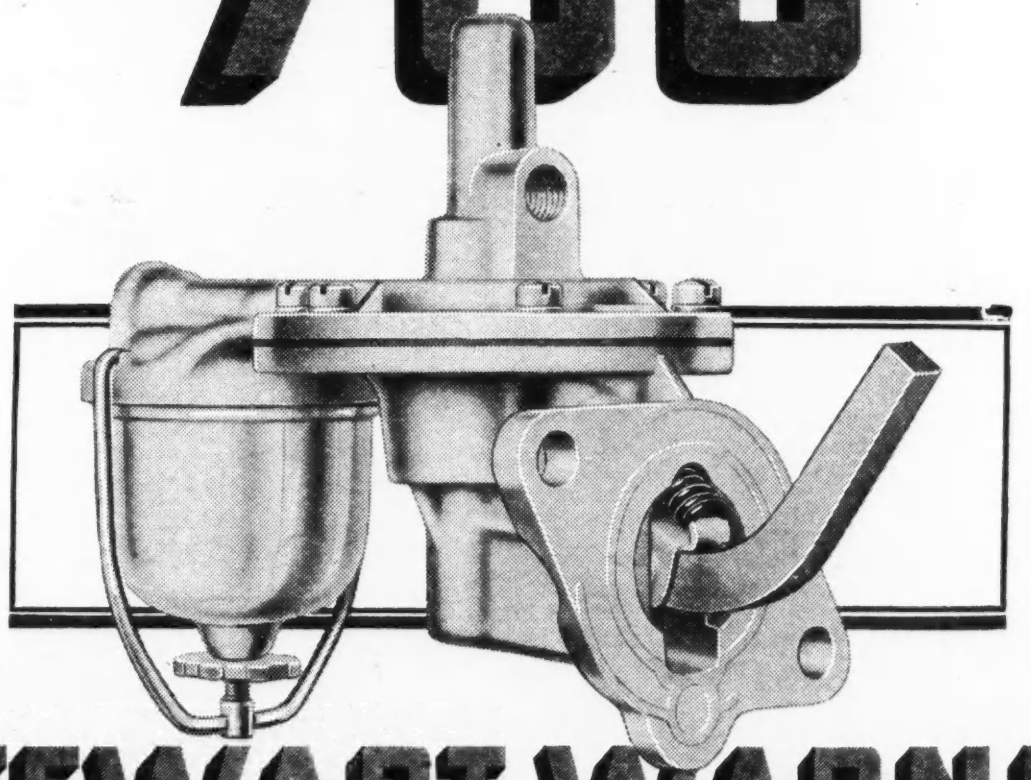
"Some diversion measures may run counter to pledges of gasoline tax moneys for highway bonds amortization. Bondholders who might have their bonds jeopardized and taxpayers who might find themselves faced with property taxes if the gasoline tax moneys were not applied to the bond reduction as pledged could well challenge such a breach of contract.

"In securing Federal-aid money for highways, the states pledged themselves under certain specific terms in their contract with the Federal government in relation to maintenance.

"In conclusion it may be said that the factual situations attendant to the diversion proposals and the frustration of the purpose of the tax may even place a new light upon the accepted legality of the tax itself."

GREATER FUEL DELIVERY AT LOW ENGINE SPEEDS

the new 706



STEWART-WARNER

Mechanical FUEL PUMP

One big advantage of this new model is that it will give quick starting in cold weather. It retains all the advantages of the Stewart-Warner pump that is now giving such reliable service.

It has demonstrated in test and service that it will deliver more fuel at low speeds than any other pump of like diaphragm size. It meets the exacting fuel delivery requirements of present-day high speed engines.

Starts in Sub-zero Weather. This pump is always dependable. Unique design has eliminated danger of diaphragm freezing fast and consequent failure of pump to start.

Maximum Delivery with Minimum Valve Lift. Valve, valve seat, valve springs and cage are a unit assembly. Unique valve design insures necessary fuel clearance with less valve lift.

Fuel Filter Screen is of very fine mesh. It is constructed to set properly when reassembled for any service reason.

Integrally Cast Vapor Dome—one-piece lever and other features of design and construction which have proved their worth in Stewart-Warner Traffic Tested Pumps.

Investigate. Our Engineers are at your command.

STEWART-WARNER CORPORATION, CHICAGO, U. S. A.

Cumulative New Commercial Car Registration Statistics, January, 1933

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Service, Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. Metropolitan district figures compiled by Sherlock & Arnold, New York city, are included in New York state total. Readers desiring county, city, or town lists, or lists of owners in any given section, may obtain these by addressing any of these three companies. Some of this data has been published previously, but it is given here complete for the convenience of our subscribers.

Returns for today: Washington.

In this table, 40 states and the District of Columbia.

States	Austin	Autocar	Brockway	Chevrolet	Diamond-T	Dodge	Federal	Ford	G. M. C.	Indiana	International	La France Republic	Mack	Pierce-Arrow	Reo	Sterling	Stewart	Studebaker	White	Willys	Miscellaneous	Totals	States
Alabama	1			99				39	3	2	12				1			1	1			159	Alabama
Arizona				17		3		14			3											37	Arizona
Colorado				84	2	6		47	16		14				2			5	1		1	178	Colorado
Connecticut				66	1	5	1	25	4	2	9		2		5			3			1	124	Connecticut
Delaware				29				15		2	2				1							49	Delaware
Florida	26			96		3		149	2	5	28				4			1	2		2	318	Florida
Georgia				66				39	4	1	9				1			1				121	Georgia
Idaho				20				15	1		3											39	Idaho
Illinois		4		242	70	36	4	199	54	3	105	2	9	1	25	6	4	13	20	3	52	852	Illinois
Indiana	1	1		147	3	12		141	9	8	58		2		3		5	14		1		405	Indiana
Kansas				37		1		37	1		4		2					2			1	85	Kansas
Kentucky	4			134	4	2		81	7	1	43				2			7	1	1	2	289	Kentucky
Maine				62	1	3		40	1		8				3				2			120	Maine
Maryland		4	2	69	1	5	1	40	7		13		2		2				2		18	166	Maryland
Michigan				176	1	8	16	135	7		34	1	2		7			8	1		5	401	Michigan
Minnesota				147	9	11	1	93	3		20				1			4		1	2	291	Minnesota
Mississippi	2			58				34			4							1				99	Mississippi
Missouri				92	1	5		76	4	3	19		1					2			3	206	Missouri
Nebraska				42	3	3		28	2		7							2			1	88	Nebraska
Nevada				10		2		9	1		2		1		1							26	Nevada
New Hampshire			1	17	3	1	1	10			3				1							37	New Hamp.
New Jersey	3	1	4	137	11	17	2	101	10	3	29		13		5		1	1	8	2	10	358	New Jersey
New Mexico				38		1		28			5							1				73	N. Mexico
New York	1	19	26	269	29	41	4	303	47	14	78		22	2	10	1	11	12	68	2	15	974	New York
North Carolina	6			194	6	18		133	9	3	17				2			1	1	1	6	402	No. Carolina
North Dakota				16		1		8	1		4											30	North Dak.
Ohio	1	1		190	12	14	1	186	6	3	56				6			3	6	4	18	507	Ohio
Oklahoma				134		8	1	56	6	3	22				1			1		2		234	Oklahoma
Oregon				18				17	2		2				1							40	Oregon
Pennsylvania	4	4	5	344	9	37	4	259	19	5	80	1	5	1	6	2	4	16	20	5	12	342	Pennsylvania
South Carolina	4			69		2		26	3	1	6				1						1	113	So. Carolina
South Dakota				15	1	1		14			5										2	38	So. Dakota
Tennessee				101		4	3	54	2	2	14							3	3		7	193	Tennessee
Texas	2			512	6	17	1	280	19	4	67		3		1			1	3	1	6	923	Texas
Utah				35		2		14	3		5				1							60	Utah
Virginia				137	2	8	1	84	8		9				3				4			256	Virginia
Washington				54	2	6	1	71	4	3	15		1		4			4	1		10	176	Washington
West Virginia				75		2		56	3	2	13							1			1	153	W. Virginia
Wisconsin				73	15	10		91	8		18		2				1	1		1	16	236	Wisconsin
Wyoming				21		5		11	1		5							1				44	Wyoming
District of Col.				22		2		38	2		8				1				7		2	82	Dist. of Col.
Totals	55	34	38	4164	191	302	42	3101	279	70	858	4	67	4	101	9	26	110	151	24	194	9824	Totals
Alabama, 1932				79		5	1	54	9		16	3	1		5		1	3	1	1	1	180	Alabama, '32
Arizona, 1932				17		3		22			2				1			1			1	47	Arizona, 1932
Colorado, 1932				163		19		198	20		35	1			9			10	4	7	7	473	Colorado, '32
Conn., 1932		1	2	66	3	10	2	47	6		13				6			1	1	1	3	162	Conn., 1932
Delaware, 1932				11		1		10	1		5				1						1	30	Delaware, '32
Florida, 1912			1	169		14	2	189	6		26				10			1	5		5	428	Florida, 1932
Georgia, 1932		1	3	169		6		150	12		26		2		3			2	6	1	2	383	Georgia, 1932
Idaho, 1932				23		1		17	2		5									1	1	50	Idaho, 1932
Illinois, 1932		2		330	46	54	13	237	33		112	15	1		27	12		6	7	21	25	941	Illinois, 1932
Indiana, 1932		2	19	191	5	25	3	166	16		53	2	1		16		6	8		9	3	525	Indiana, '32
Kansas, 1932				76	2	7		83	7		9		1		3			1		1	1	191	Kansas, '32
Kentucky, 1932			3	84	1	6	1	71	3		29		1		5			6	1	4	4	219	Kentucky, '32
Maine 1932				56	2	12		55	5		11				4			2			1	148	Maine, 1932
Maryland, 193		5	4	69	1	10	1	63	10		21		6		8	1	1		1	1	2	204	Maryland, '32
Michigan, 1932				176		26	18	179	13		27	1	5		20			4		3	4	476	Michigan, '32
Minnesota, 1932				113	11	14	1	80	7		31		4		6			3	1	1	2	274	Minn., '32
Mississippi, 1932				59		6		24	3		7							2		2		103	Miss., '32
Missouri, 1932			1	108	10	7	3	76	8		42	1	2	1	2			2	3	3	5	274	Missouri, '32
Nebraska, 1932				102	2	10		79	13		46		1		4			3		5	2	267	Nebraska, '32
Nevada, 1932				7		1			1		1											10	Nevada, 1932
New Hamp., '32				33	2	5		28	3		7	1	1									80	N. Hamp., '32
New Jersey, '32		4	5	136	24	45	4	206	17		49	2	11		22	1	3	7	15		32	633	N. Jersey, '32
N. Mexico, 32				51	1	4		42			10				1				2			111	N. Mex., '32
New York, 1932		4	25	436	27	116	1	436	62		133	1	27	1	48	11	19	6	24	7	91	1475	New York, '32
N. Carolina, '32				158	1	14		118	14		15	1			1			1	2		4	329	N. Ca'lina, '32
No. Dakota, '32				14		4		11	1		21				2			2				55	N. Dak., '32
Ohio, 1932		2	2	233	1	26	1	241	19		66	1	2	9	20		4	9	3	12	10	661	Ohio, 1932
Oklahoma, 1932				95		11		68	10		8				3			1	2	1	1	200	Okla., 1932
Oregon, 1932				27		8	1	54	5		6					1				1		103	Oregon, '32
Penn., 1932		8	8	315	4	61	2	343	37		98	4	18		30	4	13	8	14	22	62	1056	Penn., '32
So. Carolina, '32				91		5	1	48	1		3							2			2	153	S. Ca'lina, '32
So. Dakota, 1932				13		5		8	1		8		1		3			1		1	2	43	S. Dakota, '32
Tennessee, 1932				65		11	5	59	16		15		2					7			1	181	Tenn., '32
Texas, 1932				336	1	10	3	214	12		78				6			5	8	1	4	678	Texas, 1932
Utah, 1932				20		2		32	3		10		1		1			1		1		71	Utah, '32
Virginia, 1932		2		169		15	1	142	15		26	2	3		7		1	3	5	1	6	398	Virginia, '32
Washington, '32				89	2	6	1	122	9		12				8			10	1	2	13	275	Wash., '32
W. Virginia '32			1	41	1	12	1	46	6		11	1			2			1		1	7	131	W. Va., '32
Wisconsin, 1932				146	5	18		94	11		42	1			6	3		7		6	23	362	Wis., 1932
Wyoming, 1932				21		4		28	1		7							1	1	1	1	65	Wyoming, '32
Dist. of Col., '32				37	2	1	2	28	15		4				1			1			2	93	D. of Col., '32
Totals, 1932	**	31	74	4644	154	620	68	4173	433	*	1146	37	91	11	291	33	48	128	107	118	331	12538	Totals, '32

**Carried in the miscellaneous column. *Combined with Brockway.

PENNSYLVANIA PROHIBITS TRUCK RECLASSIFICATION

Harrisburg, Pa., March 16.—The Pennsylvania Department of Revenue will no longer reclassify motor trucks already registered or accept any application for registration covering newly acquired trucks unless the truck manufacturer or a direct factory branch office certifies the chassis weight of the truck to the department. Secretary Leon D. Metzger stated that this order was enacted in the interest of highway safety, that the policy of permitting a reclassification has resulted in the operator purposely changing the chassis weight of trucks so as to permit registering in a class where a greater pay load could be used and that brakes which were adequate to handle, for example, a ton and half pay load were not necessarily safe in the carrying of a three or four ton pay load.

Production—Engineering—Factory

Edited by Herbert Chase

DESIGN FACTORS AFFECTING LUBRICATION

By A. LUDLOW CLAYDEN
Research Engineer, Sun Oil Company

(Abstract of a paper presented at the recent joint meeting of the Metropolitan Section, Society of Automotive Engineers and the American Society for Testing Materials.)

Oil, or a lubricating fluid, is an essential part of a gasoline engine, just as essential as any of the metal parts. Considering the latter, none are expected to be everlasting, and some are more durable than others. Piston rings are not expected to last as long as bearings, and shafts are expected to outlast bushings. The lubricant may be regarded simply as the part with much the shortest life.

A great deal has been done in recent years to increase the "strength" of lubricants. The better motor oils of today withstand stresses considerably above the average for the better oils of the past; but meanwhile little, if anything, has been done to reduce the stresses to which the lubrication part is subjected.

In a majority of cases the durability of lubricant is low because the machine, by virtue of its mechanical design, wastes a very large amount of lubricant which has to be replaced.

The tendency of a mechanism to reject or waste large quantities of oil, however, is quite unimportant, but changes in the design of other parts might very materially reduce the rate of wear of all relatively moving surfaces within the engine. When oil wastage in an engine passes through the combustion chamber, carbon deposition is greatly stimulated. The fewer maintenance attentions required the better is an automobile operator satisfied. A car in which the replenishment or replacement of lubricant was required only at very rare intervals would certainly have a strong sales appeal.

Pistons are invariably supplied with many times the necessary volume of lubricant, and this accounts for most of the shrinkage in volume of the oil in the engine. Some excess must be supplied because lubricant which once passes the topmost piston ring is lost forever. However, the excess is invariably much greater than is necessary, and could be reduced by reducing feed.

The pressures between the working surfaces, even allowing for connecting rod thrust, are comparatively low, and although reciprocating motion is not good from the film formation point of view, even so the maintenance of a satisfactory film requires only a very small quantity of oil. The durability of a particle of oil in this service is determined mainly by its resistance to decomposition by heat. The cooler the piston the slower the decomposition. Certain combinations of gasoline-engine pistons and oils cause the accumulation of deposits in the ring grooves, which lead ultimately to ring sticking. With the same combination ring sticking is sometimes curable by increasing the oil supply, and therefore increasing the direct wasteage. This undoubtedly means that the oil is being replaced faster than it decomposes It is, therefore, conceivable that any method which provided complete control over the amount of oil fed to the piston would not necessarily enable the feed to be reduced to the minimum necessary for lubrication. Since, however, the ring sticking never occurs except when the oil used is manifestly unsuitable, it is safe to say that a very large reduction in oil wasteage would be possible if we had complete control over the supply.

It was once common practice to close the open ends of the cylinders with baffle slotted plates, but these baffles disappeared because no increase in oil consumption resulted from their removal.

Present practice is to use a scraper ring. This method has two inherent disadvantages. For proper lubrication the piston requires a definite additional oil supply for each stroke. A piston with a scraper ring depends for its lubrication upon the oil which gets by the ring. This amount will not be a definite quantity per stroke, since either increase in speed or in the excess volume which the ring is trying to scrape off will lead to the passage of an increased amount. Again, the effect of wear is to reduce the efficiency of the scraper ring, which means that the oil feed increases as piston and cylinder clearances increase, whereas lubrication requirements remain the same.

Any design which completely separated cylinders and crankcase could not be justified on the basis of reducing oil wastage, but if the use of much higher compressions becomes general, then the sensitivity to carbon formation may be enough to justify great precautions to prevent over-lubrication. If any move is made to put piston lubrication under perfect control it certainly will not be simply from the desire to reduce oil wastage.

It does not follow, however, that conditions within the crankcase might not be improved very considerably by simpler means. The actual requirements of any bearing in an engine can be stated in terms of volume per revolution. In practice, however, the volume supplied per revolution increases as the speed increases. The importance of this is very well shown in tests on thirteen makes of cars, which showed that the oil consumption at fifty-five miles per hour was 2.3 times as great as the consumption at thirty miles per hour for the car which was least affected by speed. In the case of the worst car, the consumption at fifty-five miles per hour was 19.8 times that at thirty miles per hour.

It is essential that enough oil be supplied to keep any bearing filled at all times, but this is controllable by providing means for retaining the oil within the bearing. If we could assume the use of perfectly clean lubricant, there would be no necessity for providing easy exits from the bearing. The design of the ends of a bearing greatly influences the leakage from the ends. For instance, a bearing which has a large radius in close proximity to the corresponding shaft radius will pass much more oil than will a bearing with a square end on a plain shaft.

Space consideration greatly handicaps the designer, but it does not follow that nothing can be done mechanically to reduce the end leakage on bearings or by means of some kind of baffle to intercept at least some of the oil thrown off the crank webs. It might be questioned whether the present practice of maintaining a constant pressure on the oil supply by means of a spring-loaded release valve is either necessary or desirable. Since the rotation of the shaft acts as a pump drawing on the oil supply, the gauge pressure on the supply could be reduced as speed increases without in any way starving the bearings. Incidentally, the effect of the con-

(Continued on Page 8)

Pertinent POKES and PARRIES

By HERBERT CHASE
Engineering Editor

By READERS

Two-Stroke

A reader who has long been a believer in a bright future for engines of unconventional type has made the suggestion that more information about such engines be carried in these columns. We shall be pleased to comply if he or other readers will submit designs deserving of such attention, especially as we agree that the subject is one of importance.

As we have pointed out before, we are inclined to think that engines which are more compact and have a quite different cylinder arrangement than the common in-line form are bound to come, particularly if rear engine mounting gets the attention it deserves. There are also decided possibilities in two-stroke engines which a few engineers appreciate, though many are apparently unable to see beyond certain crude forms that are not, of course, well suited for passenger car applications.

After all has been said on the merits of conventional engines, the fact still remains that they occupy upward of half the length of the average passenger car chassis. The time is coming, we believe, and may not be far distant, when we shall have really compact but amply powerful engines that detract very little from the useful carrying space in passenger vehicles. Then we shall look back and marvel that we tolerated for so long a time the present uneconomical and illogical arrangement.

If our readers remain inarticulate or unmoved on this subject they may have to put up with further prodding.

G. M. LABORATORY IS OPERATING FULL FORCE

Detroit, March 16.—According to information secured here today, the General Motors Research Laboratory is operating with a full force of about 450 men. Many new products, including what are said to be engines of unconventional type, are under development, but, of course, cannot be described at this time.

FIRESTONE SPEEDS PLANT

Akron, March 16.—J. W. Palmer, president of the Firestone Tire and Rubber Company, announced yesterday that the company's plants would increase production 50 per cent., effective immediately.

SEEK IMMEDIATE ACTION

Jersey City, March 16.—Members of the Hudson County Garage and Gasoline Dealers' Association, meeting last night in Jersey City, voted to request Homer S. Cummings, United States attorney general, to take immediate action on their charges that they are being "squeezed" in the gasoline price war.

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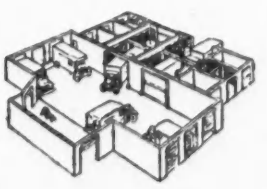

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DESIGN FACTORS AFFECTING LUBRICATION

(Continued from Page 3)

ventional release valve is also very bad under starting conditions when the viscosity is very high and greatly increased pressure would be very desirable.

An engine bearing is provided originally with a certain clearance. It is assumed that this clearance will increase with use until it reaches a maximum, at which time the bearing should be renewed. Feed capacity should be such that the bearing will be kept full of oil under the condition of maximum clearance and with oil of the minimum expected viscosity. The majority of automobile engine oiling systems supply much more oil than is enough to meet these conditions. It is the excess discharge from the bearings that loads the crankcase atmosphere with oil spray and thereby supplies an undesirable excess to pistons.

It is not generally realized that the operating temperature of a bearing cannot be reduced by increasing the amount of oil forced through the bearing. Automobile engine bearings are to some extent oil cooled, but it is the oil dropping out of the crankcase atmosphere running over the outside of the bearing and the parts in contact with it which does the cooling, and such cooling could be performed much better by other means.

The generation of heat in bearings is quite considerable. The durability of conventional bearing material falls off very rapidly with increase in temperature, hence modifications in design which would reduce bearing temperatures might be very well worth while. Supplying more oil or chilling the oil on its way to the bearings cannot make any sensible difference. Circulating air, oil or water around the outside of the bearings provides the only possible method for reducing their temperature.

Changes in shaft and bearing materials will probably take place, since cost is the only objection to making such changes now. With bearing materials of much greater durability, it would be possible safely to reduce the oil feed, because it would not be necessary to allow for very large increases in clearance resulting from wear.

The most serious deterioration in crankcase oils is contamination by abrasives. Abrasives enter almost entirely with the air for combustion and are transferred to the main body of the oil past the pistons. Also a certain amount of air enters the crankcase directly to ventilate it in order to remove portions of unburned fuel. Complete isolation of the cylinders from the crankcase would stop both these forms of contamination. At present practically all automobiles are supplied with devices which are supposed to prevent solid matter from entering with the combustion air and to remove from the oil solids which it contains. With respect to the so-called air cleaners, the author is not aware of any authenticated data which indicate that it is of any value at least under normal conditions of operation. Most air cleaners function to some extent as intake mufflers, but a good deal of rather careful work has been done in the study of air cleaning in conjunction with tractors, and this appears to prove conclusively that, so far, only quite large and moderately costly equipment is of any real use. The coming of so-called air cleaners has certainly not been accompanied by any noticeable improvement in the life of piston rings and cylinder walls.

With respect to oil filters, the author has been unable to discover any authenticated data comparing the rate of wear in normal use of engines with and without such devices. Of course, these filters do trap quite large quantities of sludge which contains a fair amount of abrasive dirt. Therefore it is safe to assume that they are of some benefit. It is admitted, however, that their effective life is not very great, and the average automobile owner does not renew a filter at proper intervals.

The most serious form of wear resulting from dust is that of piston rings and cylinders. Thus, if much greater piston and cylinder durability is desired, the only hope appears to be complete clarification of the intake air. In this connection it is conceivable that high oil wastage through excessive piston feed may be advantageous since it must tend to eject some of the dirt.

Contamination with fuel probably is of very minor importance. Why it should ever have been the cause of so much discussion is a little mysterious, because the use of lubricants of extremely low viscosity is in no way dangerous. In the average automobile engine, a viscosity decreases, the volume of oil supplied to the bearings and thence to the cylinders, increases. General Motors Research Corporation has shown that engines can be run apparently indefinitely using very highly diluted lubricant. Also, there is no measurable difference in the rate of wear over a very wide range of variation in viscosity. Apparently the only valid objection to very low viscosity is increase in noise. Since low viscosity is usually followed by high consumption, which in turn is followed by early replenishment, it would require very unusual circumstances of use for the acquisition of degrees of dilution which would be a serious hazard. Automatic means of controlling engine jacket temperatures, plus crankcase ventilation, and, more recently, plus automatic oil temperature control, has removed dilution from the list of current problems.

Leakage of products of combustion into the crankcase is, however, a somewhat different matter. Crankcase sludes originate from this leakage, since the two necessary ingredients—water and finely divided solid matter—are thus supplied. Hence quality of workmanship of cylinders and piston rings is quite important. Sludges are really dangerous because they are always apt to interfere with the oil supply, particularly at the time of starting, when, under the best of conditions, the amount of oil furnished is distinctly meager. Probably the general adoption of automatic devices for controlling oil temperature will, by the elimination of water, likewise eliminate sludge formation as a common problem. Crankcase ventilation was expected to do this, and, while it probably has improved conditions, it is certainly not sufficient to keep the water content of crankcase oils sufficiently low to prevent the formation of sludge emulsions. Ventilation and the expulsion of water by increasing the oil temperature are both correctives and not preventives. Inevitably we are brought back to the complete separation of cylinders and crankcase as the ideal method.

Meanwhile, sludge conditions could be improved considerably in many engines by preventing the secretion of small amounts of oil in places where there is normally little oil movement. Such places as valve guide compartments are often potent sludge formers, because they are places where oil is spread out in a thinnish film and exposed to fairly high temperatures. The provision of means to insure a steady flow of oil through such parts of the engine would be of great assistance.

N.S.P.A. REPORTS HELP JOBBERS FIGURE MACHINE SHOP COSTS

(Continued from Page 4)

building of shop and service equipment of customers traded in on new equipment. Servicing the present equipment of customers also offered a fertile field for shop work.

However, the profit possibilities of these activities are dependent on the portion of the existing volume of business now being done by retailers which individual wholesalers may obtain from one another.

SALES TOOLS FOR RETAILERS

To increase the existing market for machine shop services it is necessary to place the essential sales tools in the hands of retailers. Among the major ones are:

Resale Schedules—These schedules should include the machine shop operations the wholesaler is in a position to perform and what the operations include, together with list prices, so that repairmen may merely add an amount for their own time and quickly give the prospective customer a quotation on the work to be done.

Sales Literature — Repairmen should be provided with description literature covering the machines used to perform the work, the service parts which will be used and the reputation of the wholesaler who will do the machine work and supply the parts.

Demonstrations — To impress repairmen with the proper technique for selling an engine reconditioning job or other major overhauls involving services and parts the wholesaler suppiles, a sales demonstration may be made as the leading feature at a trade meeting.

A car should be placed on the stage and the dialogue should be given by two of the wholesalers' salesmen, one acting the part of the car owner and the other the repairman or service salesman.

This demonstration should prove both enjoyable and constructive and would create new or renewed interest in selling major repair jobs.

The play could be put on in two acts. The wrong way, illustrating poor approach, weak suggestion and, naturally, failure in making the sale, and then the second act, illustrating the right approach, convincing suggestion and success.

* * *

In reflecting over the brief comments on merchandising activities it becomes apparent that the machine shop facilities offer excellent means to increase service parts sales.

Then there is the point that some wholesalers feel, that by selling a retailer machine tools will reduce the machine shop sales volume. This is unquestionably true.

These wholesalers, however, should keep in mind that by not selling this equipment does not prevent another wholesaler or direct-selling manufacturer from selling this equipment to the retailer.

So the wholesaler maintaining this viewpoint eventually loses the machine work and profit on the sale of the equipment.

Certainly the wholesaler who has been doing the retailer's machine work has an intimate knowledge of equipment requirements of the retailer.

Therefore the retailer should be periodically reminded by the wholesaler who is doing machine work that he has the necessary equipment for sale, and encourage its purchase when the retailer's volume justifies the installation of the equipment in question.

MORE DETROIT PLANTS RESUME PRODUCTION

(Continued from Page 1)

that while the beginning of the spring buying season will be delayed perhaps two weeks beyond the normal start, it will bring very definite encouragement when it does arrive. Several sales officials have expressed the opinion to Automotive Daily News that once it starts the spring buying volume will show improvement over last year's levels. Decidedly the Detroit picture for the immediate future grows rosier.

Cumulative New Commercial Car Registration Statistics, February, 1933

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Service, Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. Metropolitan district figures compiled by Sherlock & Arnold, New York city, are included in New York state total. Readers desiring county, city, or town lists, or lists of owners in any given section, may obtain these by addressing any of these three companies. Some of this data has been published previously, but it is given here complete for the convenience of our subscribers.

Returns for today: Delaware, Idaho, Indiana, Maryland, Michigan, Minnesota, New Hampshire, North Carolina, North Dakota, South Carolina, South Dakota, West Virginia, Wisconsin.
In this table, 13 states.

States	Austin	Autocar	Brockway	Chevrolet	Diamond-T	Dodge	Federal	Ford	G. M. C.	Indiana	International	La France Republic	Mack	Pierce-Arrow	Reo	Rockne	Sterling	Stewart	Studebaker	White	Willys	Miscellaneous	Totals	States
Delaware				28				7			3											1	39	Delaware
Idaho				7		2		6			4												19	Idaho
Indiana	3			134	3	15	2	58	7	7	37				3			1	4			1	275	Indiana
Maryland		2	2	106	2	3	2	33	4		20		1	1	2			1	2	6	1	2	190	Maryland
Michigan				151		22	5	63	10		18	1			9	2			2	10	2	4	299	Michigan
Minnesota				118	5	2	4	28	2		28				6				3		1	6	203	Minnesota
New Hampshire				27		1		11			7				1			1	1				49	N. Hampshire
North Carolina	1			138	3	3		58	3	1	17				1							5	230	North Carolina
North Dakota				4				5			3				1								13	North Dakota
S. Carolina	2			39		1		28	1		5												76	South Carolina
S. Dakota				15	1			14			5								1				36	South Dakota
W. Virginia				53		7		19	4	1	11				4			1				2	102	W. Virginia
Wisconsin				73	6	6		45	4		22						2	1	4		1	2	166	Wisconsin
Totals	6	2	2	893	20	62	13	375	35	9	180	1	1	1	27	2	2	5	17	16	5	23	1697	Totals
Delaware, 1932				22				32	3		6									1		4	68	Delaware, '32
Idaho, 1932				16		5		11			6				1					1	1	4	45	Idaho, 1932
Indiana, 1932		1	13	169	2	15	3	136	15		50	4		2	8			2	8		5	5	438	Indiana, 1932
Maryland, '32		3	5	105	1	10	1	62	7		21			1	5				2	5	1	1	230	Maryland, '32
Michigan, '32				169		14	7	171	18		26	2			10			1	14		4	15	451	Michigan, '32
Minnesota, '32				163	10	25	2	120	9		34	1	5		9			1	8	7	2	2	398	Minnesota, '32
N. Hamp., '32				26	5	1		20	1		1				1			1	1	1	1		59	N. Hamp., '32
N. Carolina, '32				108	1	4		67	7		10				2					1		5	205	N. Carolina, '32
N. Dakota, '32				10				13			6								1				30	N. Dakota, '32
S. Carolina, '32				47		2	1	40	6										2			2	100	S. Carolina, '32
S. Dakota, '32				29		4		15	1		15								2		1		67	S. Dakota, '32
W. Virginia, '32			1	50		10		41	6		8				3					1	4	1	125	W. Virginia, '32
Wisconsin, '32				122	5	5	2	87	13		17	1	1		5		1			6	1	2	14	282	Wisconsin, '32
Totals, 1932	**	4	19	1036	24	95	16	815	86	*	200	8	6	3	44		1	5	44	18	21	53	2498	Totals, 1932

**Carried in the miscellaneous column. *Combined with Brockway.